CPI Rack-Mount Monitored and Controlled PDU User's Manual

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Table of Contents

INTRODUCTION **2**

HOW TO USE THIS MANUAL **3**

GRAPHIC CONVENTIONS 3
NOMENCLATURES 3
PRODUCT FEATURES 4

INSTALLATION CHECKLIST **5**

SAFETY WARNINGS AND CAUTIONS 5
INCLUDED HARDWARE 6
REQUIRED/OPTIONAL CABLES 6
REQUIRED SOFTWARE 6

INSTALLATION GUIDE **7**

PREPARATION 7
HARDWARE INSTALLATION 7
SERIAL SETUP – ACCESS THE PDU USING THE SERIAL CONNECTION 9
Step 1: Download the PDU Serial Access Program 9
Step 2: Connect the Computer to the PDU 9
Step 3: The Main Menu – Navigating The Serial Access Program 11
Step 4a: The Configure Menu – Configuring The PDU For SEMA Or SNMP 12
To Configure the PDU for use with SEMA 14
To Configure the PDU to send SNMP Traps 15
Step 4b: The Web Menu – Configuring The PDU For Web Browser Access 20
Step 5: The Monitor Menu – Monitoring The PDU With A Serial Connection 22
ETHERNET SETUP – ACCESS THE PDU USING THE ETHERNET CONNECTION 24
Step 1: Configuring the Browser 24
Step 2: Connect the PDU to the Network 24
Step 3: Logging onto the PDU 25
Step 4: The Main Menu – Navigating The Web Access Program 26
Step 5: The User Menu – Assign User Passwords 27
Step 6: The Configure Menu – Configure The PDU For Your Network 28
Step 7: The Monitor Menu – Monitoring The PDU Using A Web Browser 31

TROUBLESHOOTING GUIDE **32**

NO DISPLAY 32
DISPLAY SHOWS -1.8.8.8 32
RECEPTACLE HAS NO POWER 32
NO SERIAL CONNECTION 32
NO ETHERNET CONNECTION 32
NO SEMA CONNECTION 33

APPENDIX **34**

FACTORY DEFAULT SETTING 34
REGULATORY INFORMATION 35
SPECIFICATIONS 36

INTRODUCTION

This document is the User's Manual for rack-mount Monitored and Controlled PDUs by Chatsworth Products, Inc. (CPI).

CPI rack-mount Monitored and Controlled PDUs provide current monitoring over the network and are accessible though a Java-compatible Web Browser or CPI's Scalable Enterprise Management Application (SEMA) software. The PDUs can be accessed through other applications/appliances via SNMP and can be accessed with provided software using a direct serial connection to a computer. All models include a current meter with a digital display. Controlled PDUs include switched outlets/receptacles allowing power to be turned on or off and remotely cycled to each controlled port (outlet/receptacle). Controlled PDUs also measure current use at each controlled port (outlet/receptacle).

CPI rack-mount Monitored and Controlled PDUs are part of CPI's Enterprise Infrastructure Solutions and can be used with CPI's SEMA software, CenterLine, CenterBridge and PowerScope In-Line Meters to provide enterprise-wide, web-based KVM switch access to devices (computer and network switch equipment), asset management and power monitoring.

HOW TO USE THIS MANUAL

Graphic Conventions

Warning symbol.

Nomenclatures

ENET: Ethernet Port
SER: Serial Port
ENV: Environmental Port
PDU: Power Distribution Unit
Socket/Port/Outlet/Receptacle: PDU output port
SEMA: Scalable Enterprise Management Application.

Product Features

- Footprint: Vertical column or horizontal 1U/2U chassis, size varies with model
- Voltage: 110 – 250 Volts, varies with model
- Power Input cable: variable length, variable plug type
- 1 Circuit Breaker per circuit segment or phase group (optional on some models)
- 1 LED Current Display per circuit segment or phase group
- Vertical controlled PDU models have bi-colored LEDs near each switched outlet/receptacle indicating state (On/Off) – state is monitored and controlled via Serial or Ethernet connection. Controlled models may also have several outlet/receptacles that are not monitored or controlled (always on) which are outlined in green. Horizontal PowerWedge models do not have LEDs that indicate state.
- Ethernet (ENET) port: Ethernet accessible via SEMA or Java-capable Web Browser.
- Serial (SER) port: Serial accessible via a direct connection with a serial cable (CPI P/N 35941-131) to a computer that has the CPI PDU Serial program installed.
- Environmental (ENV) port: Allows attachment of an accessory Temperature and Humidity Sensor (CPI P/N 35941-132).
  - Samples and displays temperature in Fahrenheit or Celsius notation and humidity using SEMA, a Java-capable Web Browser or the PDU Serial program
  - SEMA records temperature and humidity readings and can present this information in a report.
- Ethernet/Serial access on Monitored PDUs provides options to:
  - Configure the PDU's network address (initial configuration is required)
  - Display the current drawn by each circuit segment or phase group branch
  - Display the temperature and humidity if the external sensor is attached
  - Set/Change Log and Alarm triggers
  - Log current usage and alarms*
- Ethernet/Serial access on Controlled PDUs provides options to:
  - Configure the PDU's network address (initial configuration is required)
  - Display the current drawn by each circuit segment or phase group branch
  - Display the temperature and humidity if the external sensor is attached
  - Set/Change Log and Alarm trigger
  - Log current usage and alarms*
  - Power On/Off individual controlled receptacles
  - Change On Delay and Reset Delay time for each controlled receptacle
  - Display the current drawn by each of the controlled receptacles
  - Log current usage by each of the controlled receptacles*

  **requires Ethernet access and SEMA or an application that supports SNMP*

INSTALLATION CHECKLIST

Safety Warnings and Cautions

WARNING!
DO NOT open the top cover. Hazardous Voltages Present.
When mounting heating issues must be taken into account.

DO NOT OPEN ANY PART OF THE PDU. There are no user serviceable parts inside of the PDU. Opening or removing covers may expose you to dangerous shock hazards or other risks. Refer all servicing to qualified service personnel.

- Do not spill any liquids into the chassis.
- Do not insert objects of any kind into the PDU openings, as they may touch dangerous voltage points, which can be harmful or fatal or may cause electric shock, fire or equipment failure.
- Do not place any heavy objects on the power cord. Damage to the cord may cause shock or fire.
- Should have two persons to perform the installation task to avoid dropping the PDU or damaging other equipments or causing injury.

Included Hardware

PDU:

- A vertical column (shown) or 1U/2U horizontal chassis.

PDU Rack-Mount Brackets, Screws, and Nuts:

- Vertical PDUs include tool-less mounting hardware consisting of two shoulder washers and two screws; some models also include one set of brackets for attaching the PDU to a CPI cabinet or rack as indicated by the CPI part number.
- 1U/2U Horizontal PDUs include mounting brackets that allow attachment to 19" wide EIA-310-D compliant rack/cabinet equipment mounting rails/channels. The PDU will align with a single (1U) or two (2U) rack-mount spaces on the rack. The 1U PowerWedge products require four-point (front/rear) support like a rack-mount server.

Required/Optional Cables

Ethernet (ENET) port: Standard CAT-5/6 Ethernet cable with male RJ-45 both ends. Required. Used for Ethernet connection. (Order separately. Cable not provided.)

Serial (SER) port: Custom-built serial cable with male RJ-45 on the PDU end and female DB-9 on the host end. Optional. Used for serial setup. (Order separately, CPI P/N 35941-131)

Environmental (ENV) port: Temperature and Humidity Sensor with male RJ-11 on the PDU end and the Temperature and Humidity Sensor at the other end. Optional. Used to take temperature and humidity readings. (Order separately, CPI P/N 35941-132)

Required Software

Software to configure, monitor and control the PDU via the Serial (SER) Port is available on the CPI web site at www.chatsworth.com/software-download.

- [PDU_Serial_Access_Program] is the serial setup program used to access and configure the PDU with a serial connection.
- [PDU_MIB_Files] are the MIB files for PDUs that may be required to monitor the PDU with third-party applications/appliances via SNMPv1 (not SEMA).

To monitor and control the PDU with a Web Browser via the Ethernet (ENET) Port, you need a Java-capable Web Browser (such as Internet Explorer, Mozilla Firefox or Opera) with Java enabled in the browser's preferences/options and must install Java VM JRE 1.4.2_04_b05 or newer version. Download Java VM JRE at www.java.com.

INSTALLATION GUIDE

Preparation

- All CPI PDUs come pre-configured with the same IP address (192.168.123.123). You must configure the PDU with a unique IP address that matches your network requirements prior to connecting the PDU to your network to prevent address conflicts. Configure the PDU using the instructions in the Serial Setup or Ethernet Setup sections of this manual.

- Prepare a list of which servers will connect to each PDU outlet receptacle. For ease of management, it is recommended to connect the server to the receptacle that is approximately at the same elevation in the cabinet.

- If the rack device (server) has more than one input for power, for the purpose of redundancy, the power cables should connect to different PDUs.

- Controlled PDUs may have several unmanaged ports that are outlined in green color. These ports are always on; they are not monitored or controlled by the user.

- Keep the sticker that has the PDU's Ethernet Hardware Address (MAC address) and fill in the PDU name. This will help identify the PDU when configuring SEMA or when troubleshooting.

Hardware Installation

- Configure the PDU for use in your network using the Serial Setup or Ethernet Setup instructions in this manual before attaching the PDU to your main network.

- Attach the PDU to the rack/cabinet and secure the PDU ground.

- Connect the Ethernet cable from PDU's ENET port to the Network Switch. This connection is for managing the PDU using a Java-capable Web Browser or SEMA or SNMP with other applications/appliances.

Note: This photo shows a single-phase PDU. The LED current display for most PDU models is not located next to the ENET, ENV and SER ports.

- Optional: Connect the Temperature and Humidity Sensor (P/N 35941-132, sold separately) to the ENV port. Position the sensor where you want to take temperature and humidity readings, typically near the top of the cabinet.

- Optional: Connect the Serial cable from the SER port on the PDU to the serial port on a computer. This connection is for managing the PDU using the PDU Serial Access Program [PDUSerial.exe]. The Serial Access Program [PDUSerial.exe] must be installed on the connected computer.

- Apply power to the PDU. The LED Current Displays will light up.
- Properly connect the rack device (server) power cables to the desired receptacles.
- Power on the rack devices. The LED Current Displays will display total current usage on the branch circuit.

Serial Setup – Access The PDU Using The Serial Connection

This section explains how to access, configure and monitor (control) the PDU using a direct serial connection to a computer. You can use Serial Setup to configure the PDU so that it can be accessed with SEMA, a Web Browser or SNMP once connected to your Ethernet network.

Serial setup requires a Serial Setup Cable (CPI P/N 35941-131, ordered separately) to make the connection between the PDU and the computer. If your computer does not have a 9-pin serial connector, you will also need a 9-pin serial-to-USB converter.

Step 1: Download the PDU Serial Access Program

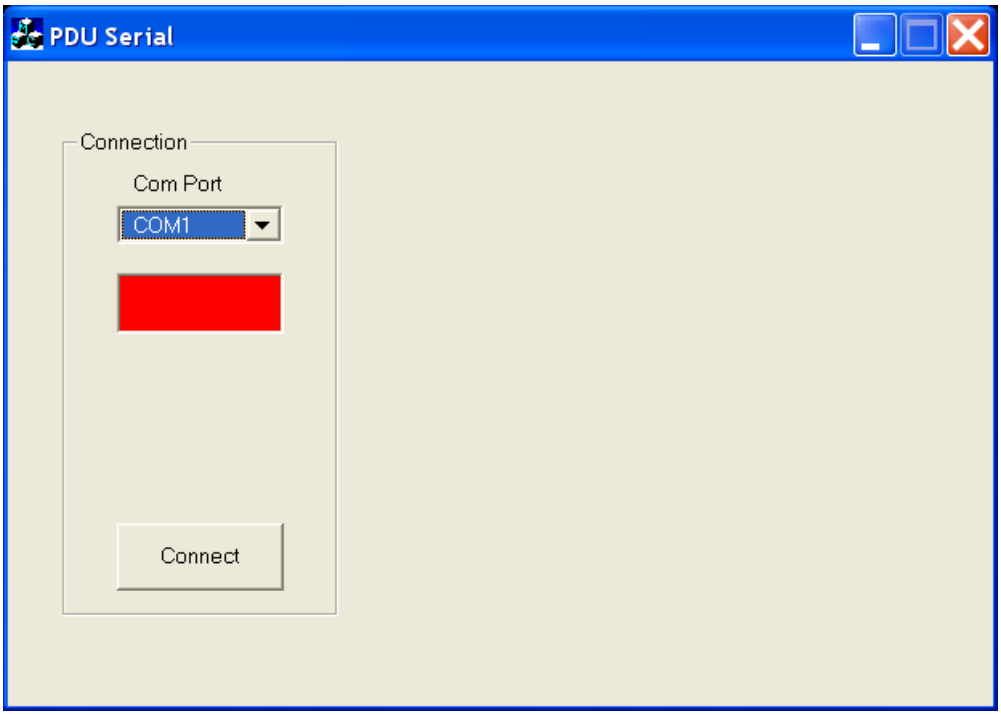
- Download the PDU Serial Access Program [PDUSerial.exe] from the CPI website www.chatsworth.com/software-download.
- Unzip the file and extract (save) the software program (3 files) into a single directory on the computer that you will use to configure the PDU.

Step 2: Connect the Computer to the PDU

- Connect the PDU to the computer using the Serial Setup Cable (CPI P/N 35941-131, ordered separately).
- Plug the RJ-45 connector on the cable into the SER port on the PDU.

- Plug the 9-pin serial connector into the computer.
- Connect the PDU to a power source. The LED display will light up (as shown above).

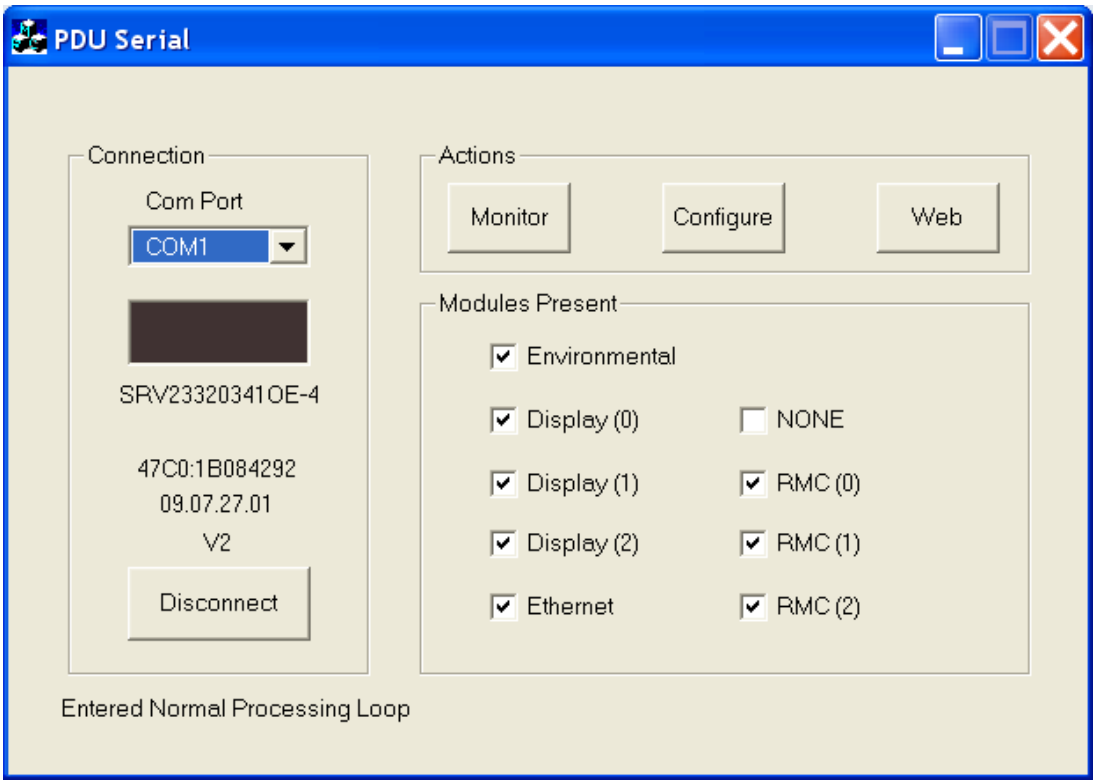
- Start the PDU Serial Access program by double-clicking on the program icon.
- The following screen should display:



- Select the appropriate COM Port from the drop down list and click on the [Connect] button to connect to the PDU and display the main menu.

Step 3: The Main Menu – Navigating The Serial Access Program

Once you connect to the PDU, a main menu with [Monitor/Status], [Configure] and [Web] buttons (Actions) similar to the screen below will display:



Note: The check boxes in the Modules Present area will be different depending on the PDU model. You cannot change any of the settings in this section.

- The purpose of each button on the main menu (shown above) is described below:

  Monitor: Select the [Monitor] button to view current readings on Monitored and Controlled PDUs and to control the outlets (on/off/reset) on Controlled PDUs. See pages 22 and 23 for details.

  Configure: Select the [Configure] button to configure the PDU with IP, SEMA and SNMP settings including alarm and delay settings. See pages 12 through 19 for details.

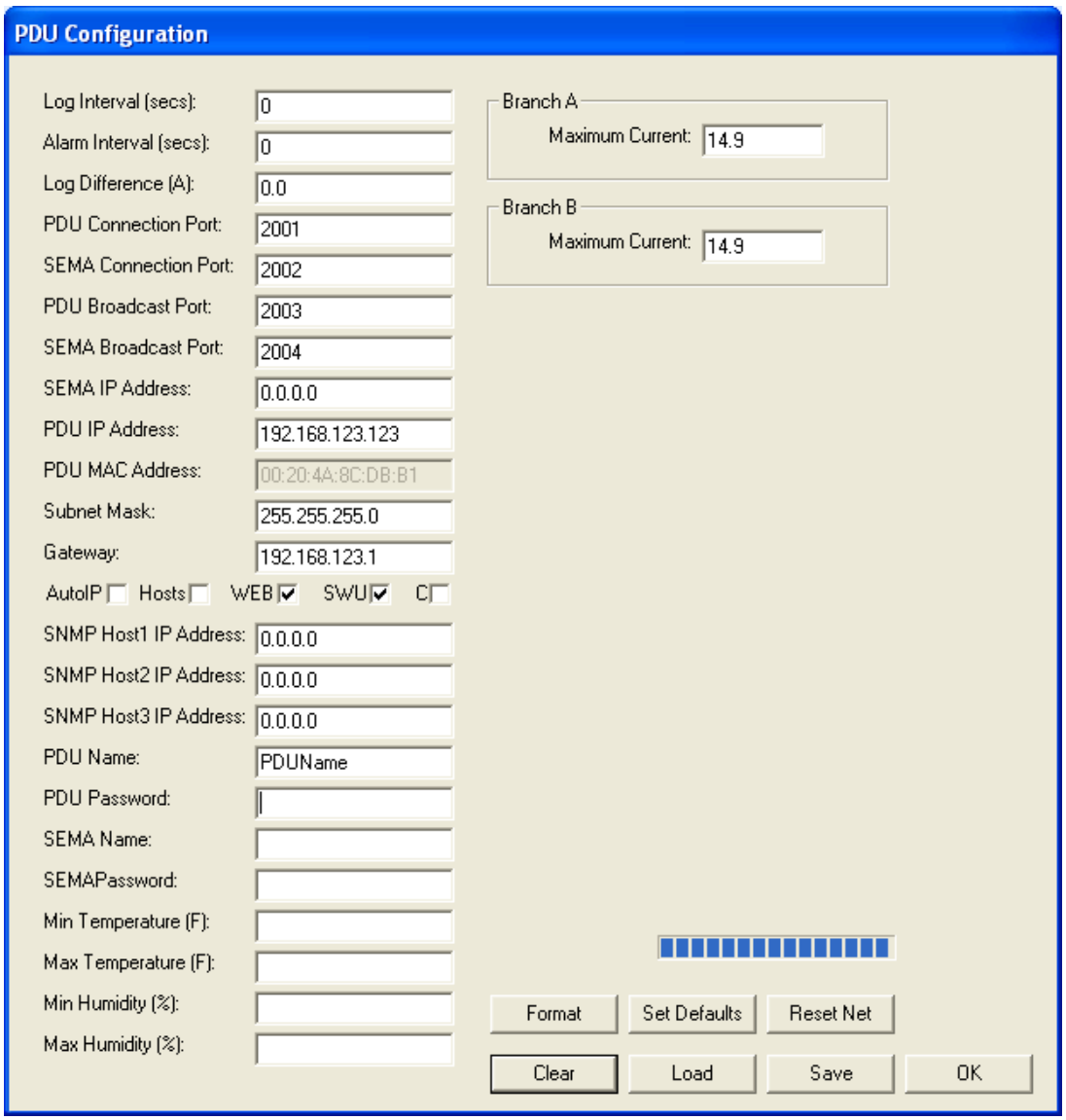
  Web: Select the [Web] button under the Actions section of the main menu (shown above) to configure the web address and user passwords for accessing the PDU with a Java-capable Web Browser, not SEMA. See pages 20 and 21 for details.

  Disconnect: Select the [Disconnect] button to exit the program and stop the serial connection between the PDU and computer.

Step 4a: The Configure Menu – Configuring The PDU For SEMA Or SNMP

Press the [Configure] button under the Actions section of the main menu to open the PDU Configuration screen.

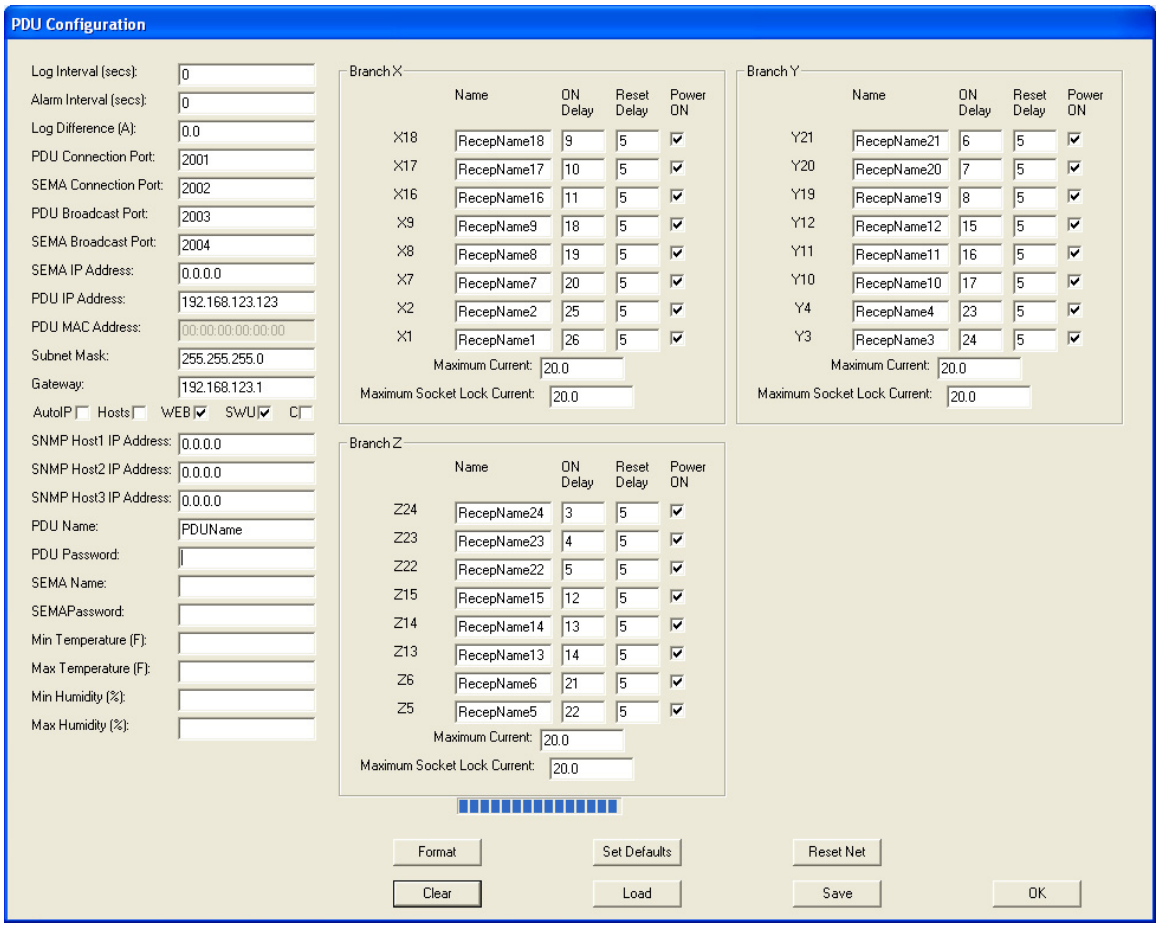
On a Monitored PDU, the PDU Configuration screen will display SEMA, IP and SNMP input fields, maximum/minimum settings for temperature and humidity, and a Maximum Current setting for each circuit segment or phase group (Branch A and B).



Note: The example above is from a single-phase Monitored PDU with receptacles grouped into two circuit segments (Branch A and B). On a three-phase PDU, the receptacles would be grouped into three phase groups (Branch X, Y, and Z) and there would be three fields to enter Maximum Current.

A description of each input field is listed on pages 16 through 18.

On a Controlled PDU, the PDU Configuration screen will also include an input field for the name of each receptacle, for the ON delay and Reset Delay of each receptacle, for Maximum Socket Lock Current, and a check box to turn power on (checked) or off (not checked) for each switched receptacle.



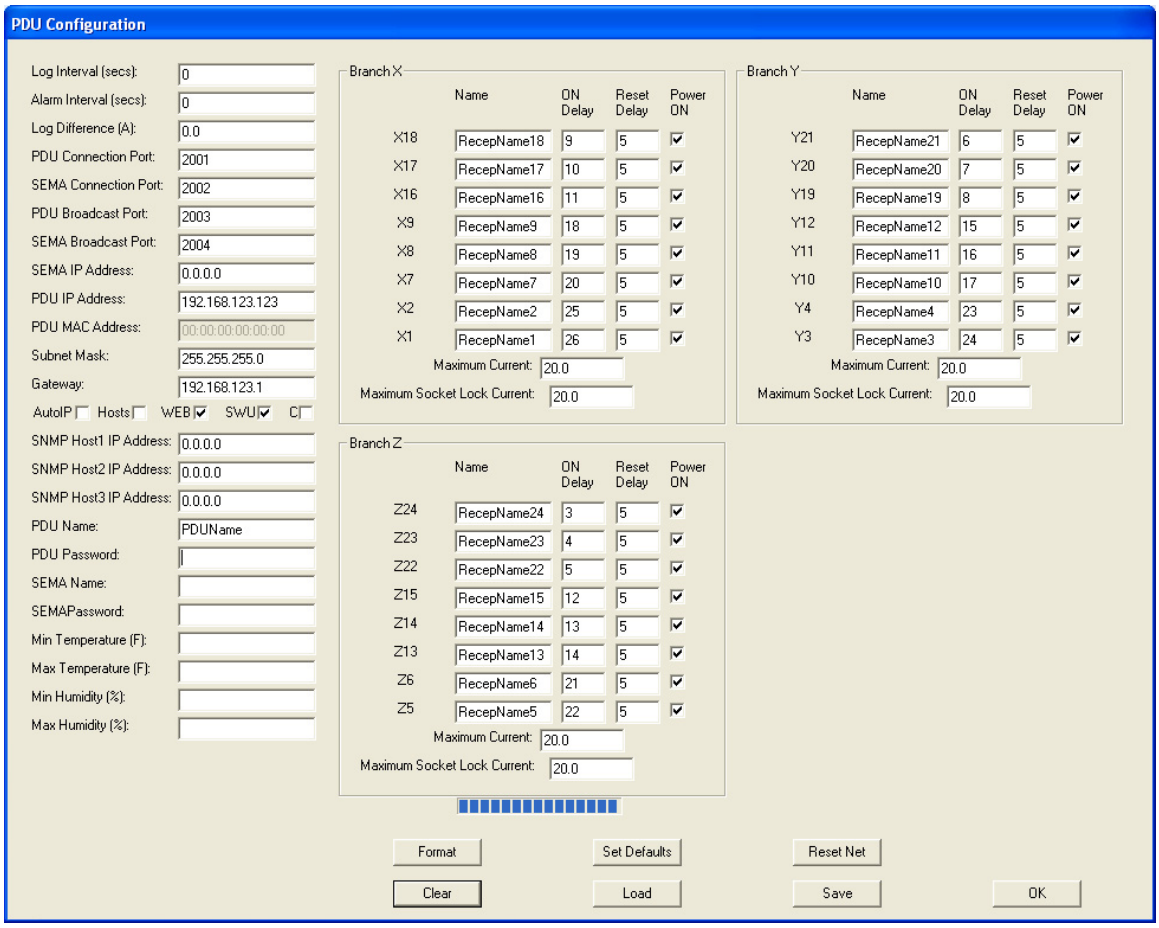
Note: The example above is from a three-phase Controlled PDU with receptacles grouped into three phase groups (Branch X, Y, and Z). On a single-phase PDU, the receptacles would be grouped into one (Branch A) or two circuit segments (Branch A and B).

A description of each input field is listed on pages 16 through 18.

To Configure the PDU for use with SEMA

If you are configuring the PDU for use with SEMA, fill in all fields, set a unique PDU IP Address, set the SNMP Host Address fields to 0.0.0.0 (disabled) and leave the AutoIP and Hosts checkboxes unchecked. See the example below.

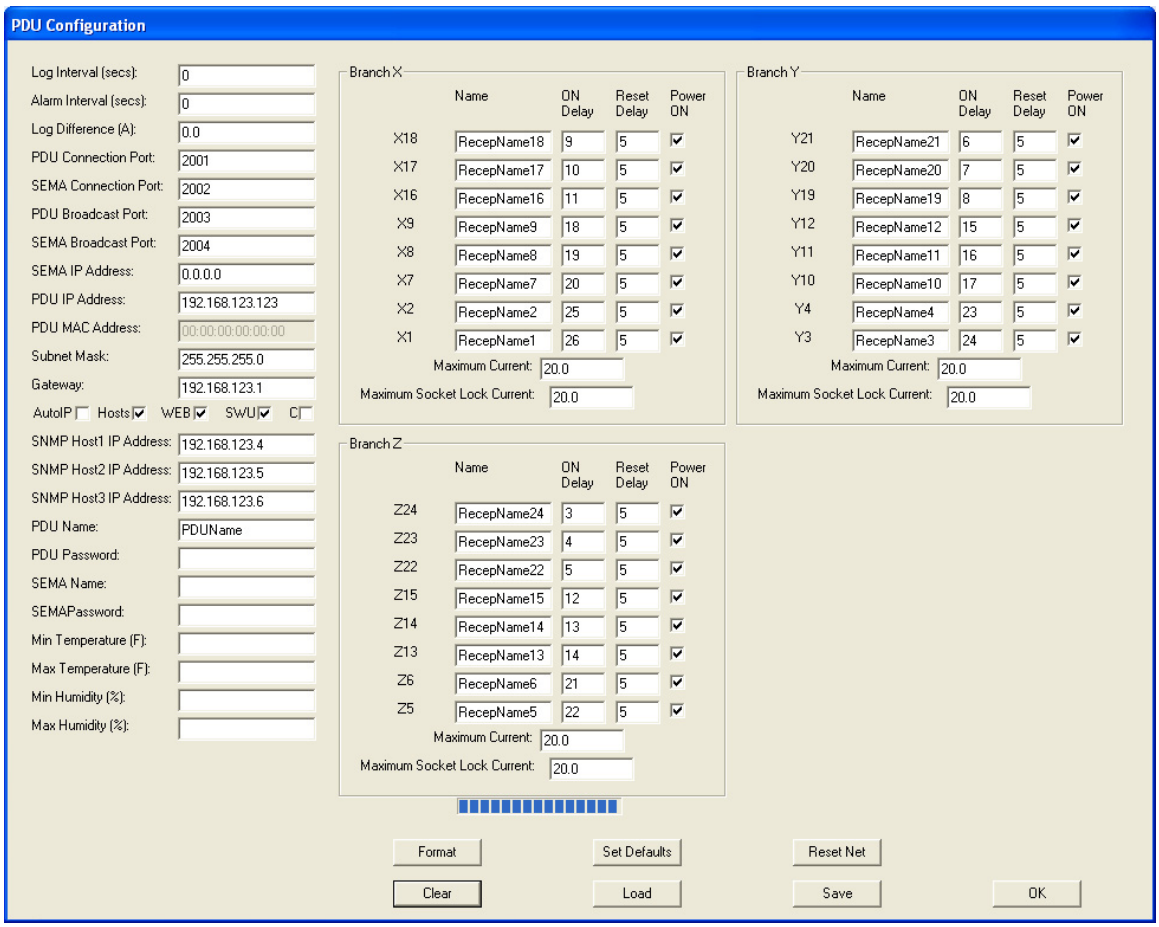
- Enter temperature and humidity limits if a Temperature and Humidity Sensor (P/N 35941-132) is attached to the PDU.
- A description for each input field is listed on pages 16 through 18.
- [Save] your settings and [Reset Net] to apply any network changes then click [OK] to return to the main menu.
- Disconnect the serial connection and connect the ENET port on the PDU to your network.
- You will now be able to access the PDU through SEMA.



To Configure the PDU to send SNMP Traps
If you are not using SEMA, but want the PDU to forward SNMP traps as alarms to another monitoring appliance/application when the maximum current, maximum/minimum temperature or maximum/minimum humidity is reached, fill in the SNMP Host Address fields and check the Hosts checkbox.

If you need to import the PDU's MIB files into your monitoring appliance/application, download the [PDU MIB files] from the CPI website at www.chatsworth.com/software-download.

- You do not need to fill in PDU Connection Port, SEMA Connection Port, PDU Broadcast Port, SEMA Broadcast Port, SEMA IP Address, PDU Password, SEMA Name, or SEMA Password. These values are only required when monitoring the PDU with SEMA.
- A description for each input field is listed on pages 16 through 18.
- Save your settings and [Reset Net] to apply any network changes then click OK to return to the main menu.
- Disconnect the serial connection and connect the ENET port on the PDU to your network.
- The PDU will now forward SNMP traps to your monitoring appliance/application.



- A description of each input field on the PDU Configuration screen is listed below:

  Log Interval: Time interval (in seconds) that the PDU will send updated metrics to SEMA or SNMP host over network. If this variable is set to a value of less than 10 the logging is disabled. Maximum value that can be entered is 64,000. This field is only required when using the PDU with SEMA or SNMP host.

  Alarm Interval: Time interval (in seconds) that the PDU will send notification to SEMA or SNMP host over network when an alarm condition arises. If this variable is set to a value of less than 10 the alarm notification is disabled. Maximum value that can be entered is 64,000. This field is only required when using the PDU with SEMA or SNMP host.

  Log Difference: Absolute value difference (in Amperes) that the PDU must detect in the change of consumption before it will send updated metrics to SEMA or SNMP host over network. If this variable is set to 0 the difference logging is disabled. Maximum value that can be entered is 640.00. This field is only required when using the PDU with SEMA or SNMP host.

  PDU Connection Port: This is the TCP/IP port number that the PDU uses to listen for communications from SEMA. This value is normally set to 2001 and should not be changed unless it is done system wide with the SEMA. Maximum value that can be entered is 64,000. This field is only required when using the PDU with SEMA.

  SEMA Connection Port: This is the TCP/IP port number that the SEMA uses to listen for communications from a PDU. This value is normally set to 2002 and should not be changed unless it is done system wide with the SEMA. Maximum value that can be entered is 64,000. This field is only required when using the PDU with SEMA.

  PDU Broadcast Port: This is the TCP/IP port number that the PDU uses to listen for broadcast communications from SEMA. This value is normally set to 2003 and should not be changed unless it is done system wide with the SEMA. Maximum value that can be entered is 64,000. This field is only required when using the PDU with SEMA.

  SEMA Broadcast Port: This is the TCP/IP port number that the SEMA uses to listen for broadcast communications from a PDU. This value is normally set to 2004 and should not be changed unless it is done system wide with the SEMA. Maximum value that can be entered is 64,000. This field is only required when using the PDU with SEMA.

  SEMA IP Address: Contains the assigned IP address for SEMA in the form of xxx.xxx.xxx.xxx, where xxx is a number from 1 to 254. This field is only required when using the PDU with SEMA.

  PDU IP Address: Contains the assigned IP address for the PDU in the form of xxx.xxx.xxx.xxx, where xxx is a number from 1 to 254. This field is not required if the AutoIP checkbox is checked. A static IP address is required with SEMA to log current, temperature and humidity readings.

PDU MAC Address: Contains the assigned MAC address for the PDU's network interface hardware. This value cannot be changed.

Subnet Mask: Contains the network masking bits for the PDU in the form of xxx.xxx.xxx.xxx, where xxx is usually 255 or 0 to designate a bit pattern that masks in the network address portion of the IP address. These values depend on the network class of the assigned IP address.

Gateway: Contains the IP address of the network's gateway PDU in the form of xxx.xxx.xxx.xxx, where xxx is a number from 1 to 254.

AutoIP Checkbox: Check to use a dynamic IP address assigned by a DHCP server instead of the static IP assigned in the PDU IP Address field. A static IP address is required with SEMA to log current, temperature and humidity readings.

Hosts Checkbox: Check to indicate that only the Hosts identified in the SNMP Hosts IP Address fields can access the PDU via SNMP. When unchecked, any host can access the PDU via SNMP.

WEB Checkbox: Check to allow access to the PDU using a web browser. This box should always be checked.

SWU Checkbox: Check to allow software updates.

SNMP Host1 IP Address: The PDU will send current, temperature and humidity alarms to this IP Address as SNMP traps. Leave 0.0.0.0 to disable. Not required when SEMA is used to monitor the PDU.

SNMP Host2 IP Address: The PDU will send current, temperature and humidity alarms to this IP Address as SNMP traps. Leave 0.0.0.0 to disable. Not required when SEMA is used to monitor the PDU.

SNMP Host3 IP Address: The PDU will send current, temperature and humidity alarms to this IP Address as SNMP traps. Leave 0.0.0.0 to disable. Not required when SEMA is used to monitor the PDU.

PDU Name: Name assigned to this PDU, the maximum number of characters that can be entered is less than 32.

PDU Password: Holds the password used by the PDU to access SEMA. This is a protected variable accessible only by SEMA. This field is only required when using the PDU with SEMA.

SEMA Name: Name of the SEMA group that this PDU belongs to. This is a protected variable accessible only by SEMA. This field is only required when using the PDU with SEMA.

SEMA Password: Holds the password used by SEMA to access this PDU. This is a protected variable accessible only by SEMA. This field is only required when using the PDU with SEMA.

Min Temperature: Set the low temperature threshold (in degrees Fahrenheit) that when reached the PDU will send an alert to SEMA or an alarm as an SNMP trap. If this variable is set to 0 the notification is disabled. Maximum value that should be entered is 199.

Max Temperature: Set the high temperature threshold (in degrees Fahrenheit) that when reached the PDU will send an alert to SEMA or an alarm as an SNMP trap. If this variable is set to 0 the notification is disabled. Maximum value that should be entered is 199.

Min Humidity: Set the low humidity threshold (in %) that when reached the PDU will send an alert to SEMA or an alarm as an SNMP trap. If this variable is set to 0 the notification is disabled. Maximum value that should be entered is 100.

Max Humidity: Set the high humidity threshold (in %) that when reached the PDU will send an alert to SEMA or an alarm as an SNMP trap. If this variable is set to 0 the notification is disabled. Maximum value that should be entered is 100.

Socket Name: Holds the name assigned to each of the controlled outlets. Maximum number of characters must be less than 32. This field is only available on Controlled PDUs.

ON Delay: Holds the delay value (in seconds) for each of the controlled outlets, which they will spend during the first power ON of the PDU. Maximum value that can be entered is 255. This delay sequence is not applied when the circuit breakers are reset. This field is only available on Controlled PDUs.

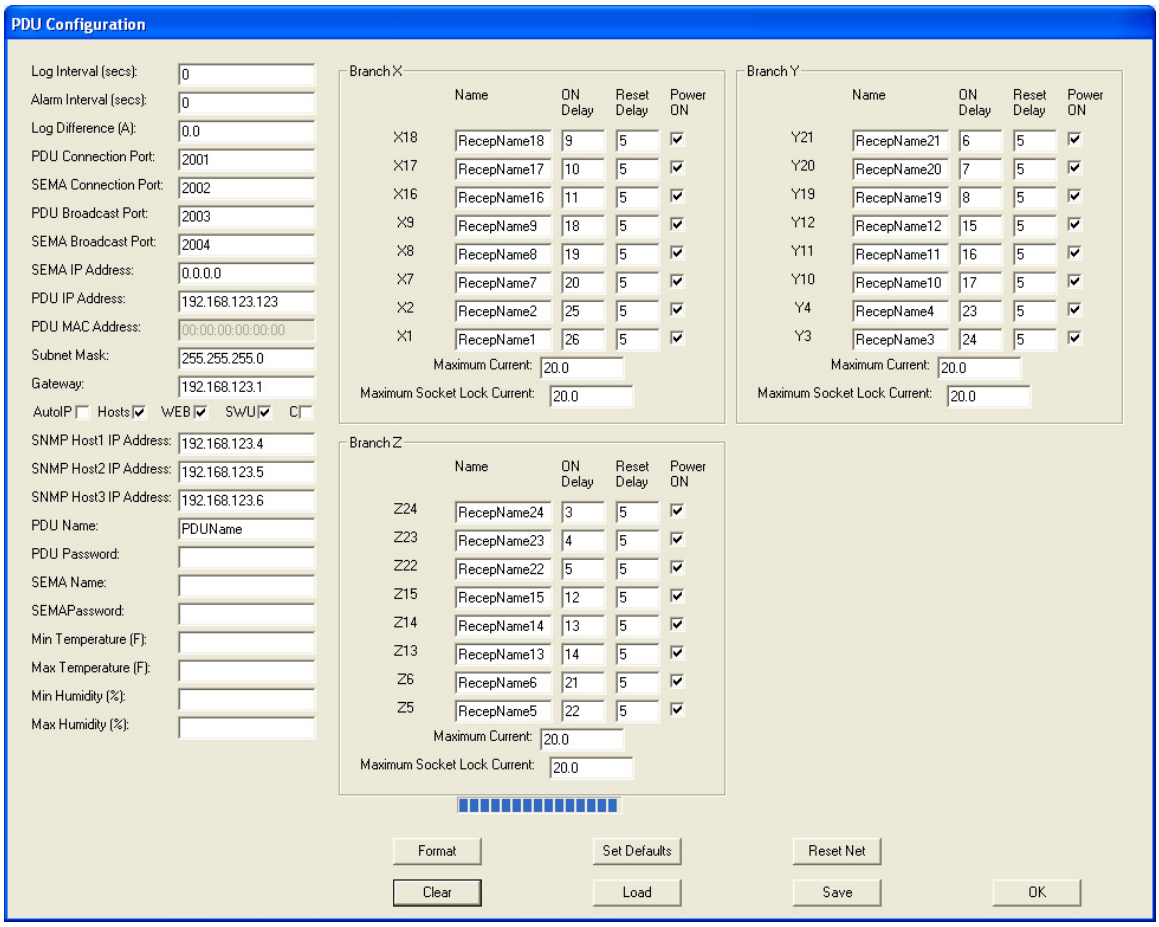
Reset Delay: Holds the delay value (in seconds) for each of the controlled outlets, which they will spend in the OFF state before going back to the ON after executing a reset command from SEMA, a web browser or serial connection. Maximum value that can be entered is 255. This field is only available on Controlled PDUs.

Power ON: Holds the current power on state for each of the controlled outlets. A checked checkbox indicates that power is ON for that outlet. Un-checking the checkbox will turn the power OFF for that outlet. This field is only available on Controlled PDUs.

Maximum Current: Is the value (in Amperes) that when the branch circuit consumption is reached the PDU will send an alert to SEMA or an alarm as an SNMP trap. If this variable is set to 0 the detection/notification is disabled. Maximum value that can be entered is 640.00.

Maximum Socket Lock Current: Is the value (in Amperes) that when the branch circuit consumption is reached will lock all the OFF state controlled outlets. To turn any of those outlets ON, the user must reduce the current consumption on the branch or increase this value. If this variable is set to 0 the socket locking is disabled. Maximum value that can be entered is 640.00. This field is only available on Controlled PDUs.

- The purpose of each button on the PDU Configuration screen is described below:



Format: Manufacturing initialization of the non-volatile storage for the configuration variables. This action will destroy any previous values that were saved.

Set Defaults: Sets all the configuration variables to some pre-set default manufacturing values.

Clear: Clears all the configuration variables.

Reset Net: Makes effective the changes made to the network parameters. If you change the IP address, it will become effective immediately if this button is clicked.

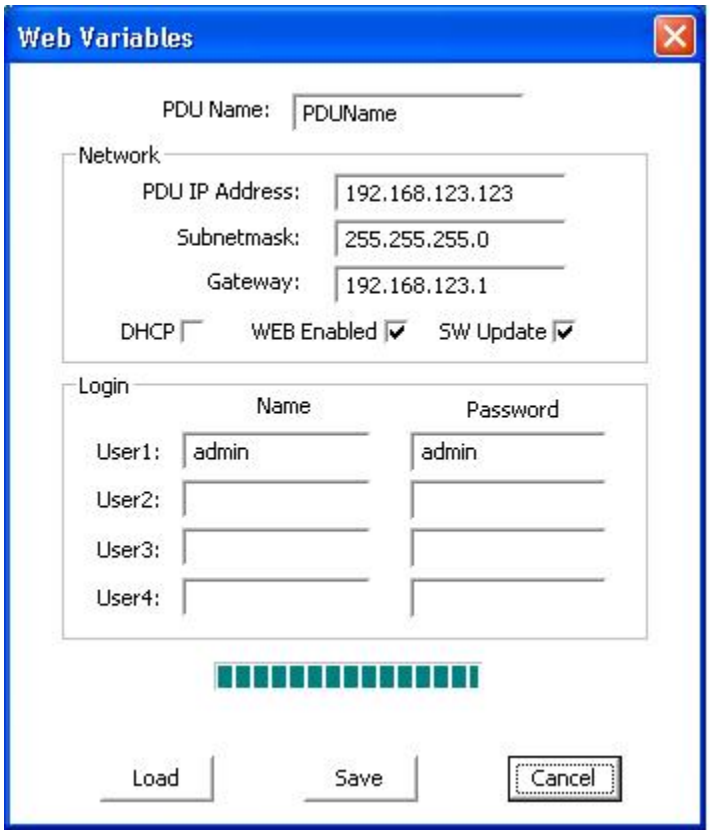
Save: Saves all the displayed configuration data into the PDU's non-volatile storage and apply the newly configured values. If you change the IP address, it will become effective immediately if this button is clicked.

Cancel: Discards all the changes made in the current session

Load: Shows all the current PDU configuration data.

Step 4b: The Web Menu – Configuring The PDU For Web Browser Access

Press the [Web] button under the Actions section of the main menu to open the Web Variables screen.



If you are not using SEMA, but you want to access the PDU using a Java-capable Web Browser, you can change the PDU network configuration and login information from the Web Variable screen. You can also change these settings using the Ethernet Setup menus.

- Click the [Load] button to load the current settings for the PDU.
- A description of each field is on the following page. The default settings are:
  PDU Name: PDUName
  PDU IP Address: 192.168.123.123
  Subnetmask: 255.255.255.0
  Gateway: 192.168.123.1
  Web Enabled: checked
  SW Update: checked
  Login User 1 Name and Password: admin, admin
- Enter the information for your network.
- Click the [Save] button to save your changes and return to the main menu. If you change the PDU IP Address, you will need to use the new address to access the PDU after you press save.
- Click the [Cancel] button to return to the main menu without making/saving changes.

- A description of each input field on the PDU Configuration screen is listed below:

  PDU Name: Name assigned to this PDU, the maximum number of characters that can be entered is less than 32.

  PDU IP Address: Contains the assigned IP address for the PDU in the form of xxx.xxx.xxx.xxx, where xxx is a number from 1 to 254. This field is not required if the AutoIP checkbox is checked.

  Subnet Mask: Contains the network masking bits for the PDU in the form of xxx.xxx.xxx.xxx, where xxx is usually 255 or 0 to designate a bit pattern that masks in the network address portion of the IP address. These values depend on the network class of the assigned IP address.

  Gateway: Contains the IP address of the network's gateway PDU in the form of xxx.xxx.xxx.xxx, where xxx is a number from 1 to 254.

  DHCP checkbox: Check to use a dynamic IP address assigned by a DHCP server instead of the static IP assigned in the PDU IP Address field.

  WEB Enabled checkbox: Check to allow access to the PDU using a web browser. This box should always be checked.

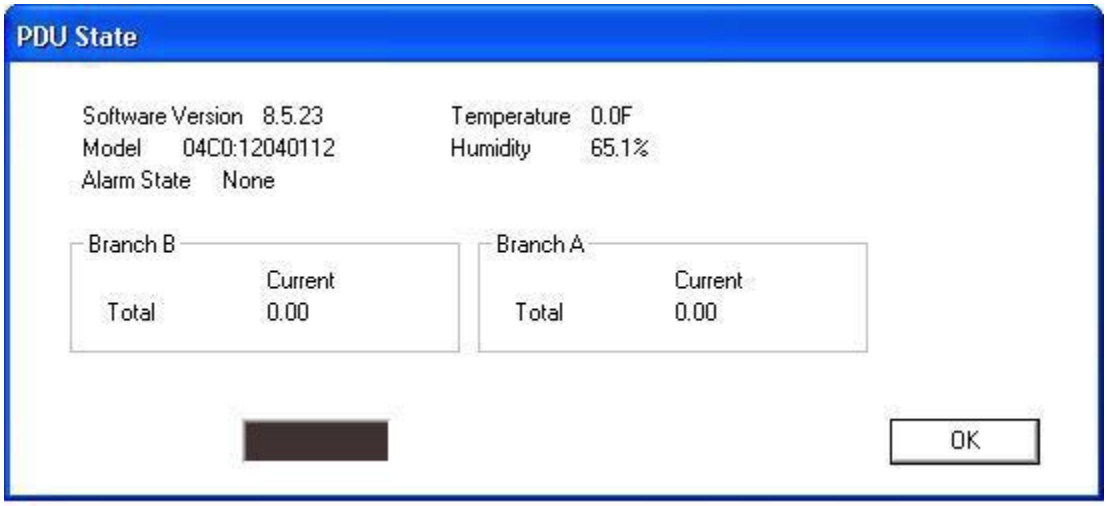
  SW Update checkbox: Check to allow software updates.

  Login User Name/Password: There are four login user accounts for PDUs that are accessed using a Java-capable web browser. Enter up to four user names and passwords. The default account is admin, admin.

Step 5: The Monitor Menu – Monitoring The PDU With A Serial Connection

To monitor the PDU using the serial connection, press the [Monitor] button under the Actions section of the main menu.

On a Monitored PDU, the PDU State screen will display the Software Version, Model (MAC address), Alarm State, Temperature, Humidity, and Total Current used by each branch (circuit segment or phase group) on the PDU.

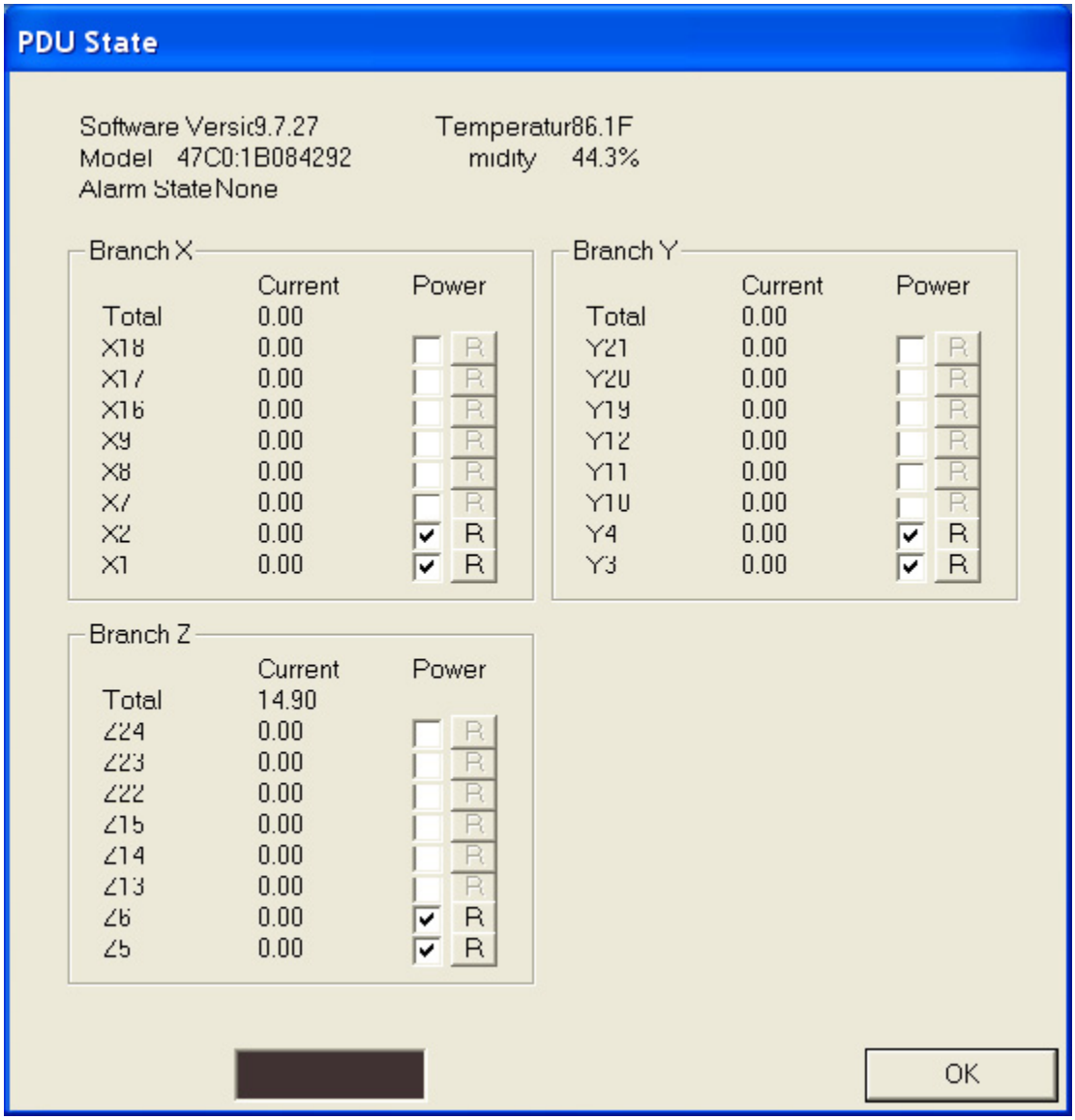


Note: A Temperature and Humidity Sensor (P/N 35941-132, ordered separately) must be attached to the PDU to display Temperature and Humidity.

Click the [OK] button to exit to the main menu.

On a Controlled PDU, the PDU State screen will also include a check box to turn power on (checked) or off (not checked) for each switched receptacle and an [R] (reset) button to cycle power to each switched receptacle that is on.

The amount of current use by receptacle is also displayed. The PDU may include extra receptacles that are not controlled. These receptacles are not listed under the branches, but the total amount of current will include current use by all receptacles on the PDU.



Note: The example above is from a three-phase Controlled PDU with receptacles grouped into three phase groups (Branch X, Y, and Z). On a single-phase PDU, the receptacles would be grouped into one (Branch) or two circuit segments (Branch A and B).

Click the [OK] button to exit to the main menu.

Ethernet Setup – Access The PDU Using The Ethernet Connection

This section explains how to access, configure, and monitor (control) the PDU using an Ethernet connection and a networked computer with a Java-capable Web Browser. You can also use Ethernet Setup to configure the PDU so that it can be accessed with SEMA or SNMP with a different application/appliance.

Step 1: Configuring the Browser

- Verify that you have a Java-capable Web Browser such as Internet Explorer, Mozilla Firefox, or Opera installed on your computer.
- Verify that the Java VM (JRE) version JRE 1.4.2_04_b05 or a newer version is installed on your computer. If not, download the file from www.java.com and install it.
- Verify that Java is enabled in your browser's preferences/options.

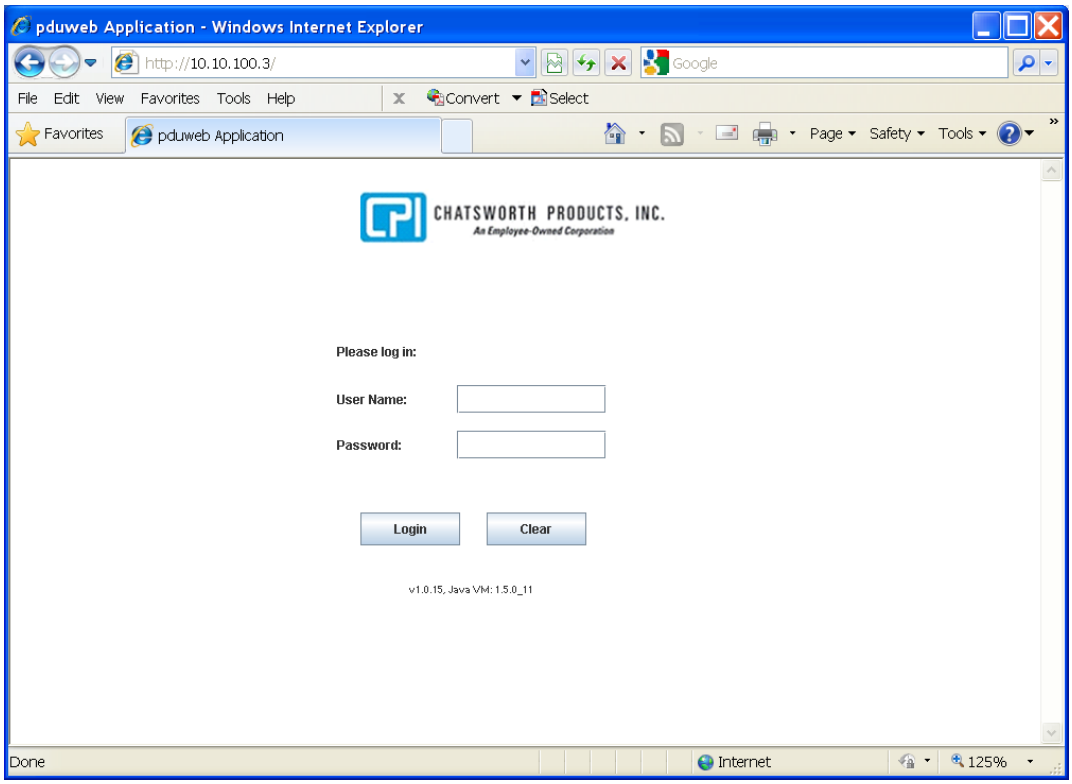
Step 2: Connect the PDU to the Network

- Create a network that includes the PDU and your computer. Isolate the PDU and computer from the main network during initial configuration. All CPI PDUs come pre-configured with the same IP address. Attaching multiple PDUs to the main network may cause connection issues. Instead, use a crossover cable to connect the PDU directly to the computer or a use small hub or switch to connect the computer and PDU.
- Be sure the PDU is attached to the network via the ENET port and powered on.

- Connect the computer to the same network. Your computer and the PDU should be on the same sub-net (Netmask).
- Verify the PDU's IP address. The factory-assigned default IP settings are:
  IP Address = 192.168.123.123
  Netmask = 255.255.255.0
  Gateway = 192.168.123.1
- Open your web browser.
- Type the PDU's IP address in the web browsers address bar. For example: http://192.168.123.123. If you already changed the IP address with Serial Setup prior to accessing the PDU with a web browser, use the assigned IP Address.
- If Java is enabled in your web browser preferences/options, the PDUWeb's login panel will display.

Step 3: Logging onto the PDU

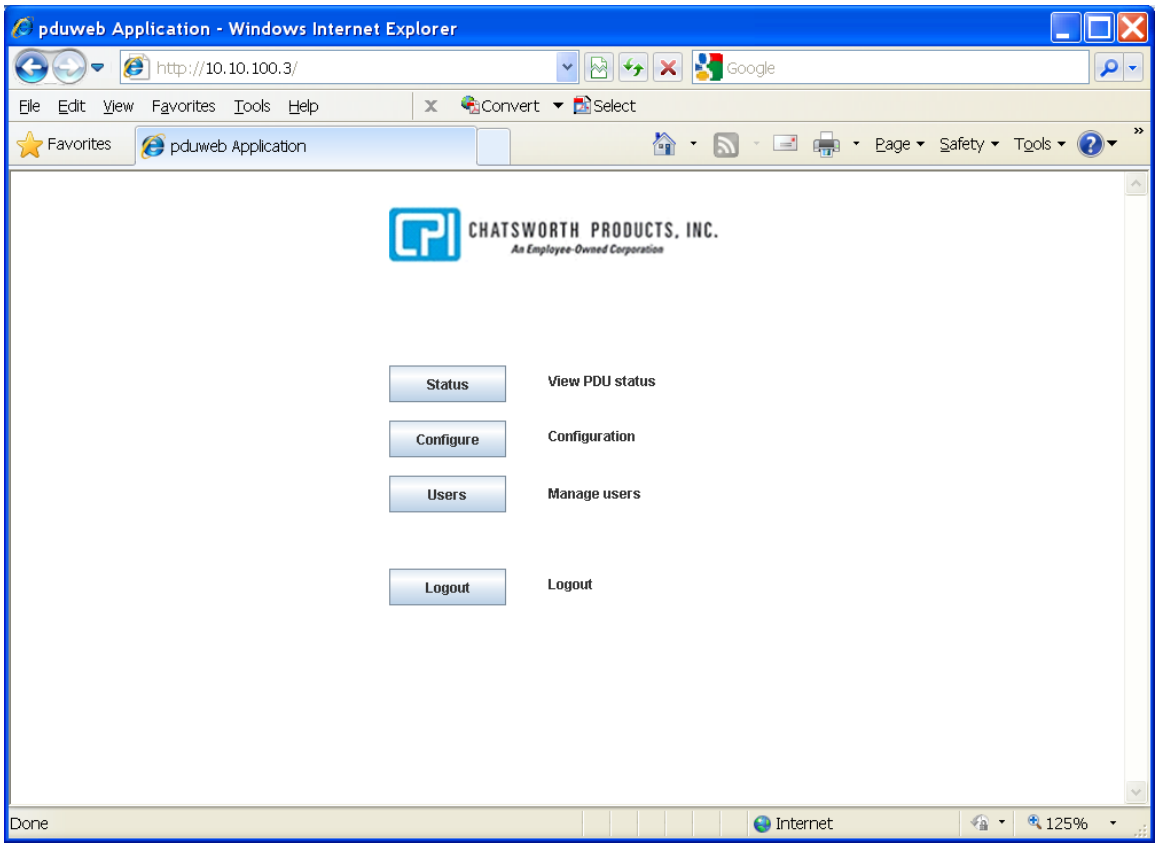
The login panel will have a field for user name and password. The PDUWeb applet's version number and the Java VM version number will also be displayed.



- Enter the user name in the user name field and the password in the password field. For the initial log on, enter the default user name (admin) and password (admin). If you already changed the user name and password prior to accessing the PDU with a web browser, use the assigned user name and password.
- Press the [Login] button to access the PDU or press the [Clear] button to clear the fields.

Step 4: The Main Menu – Navigating The Web Access Program

Once logged in, you will see four buttons: [Status], [Configure], [Users] and [Logout].

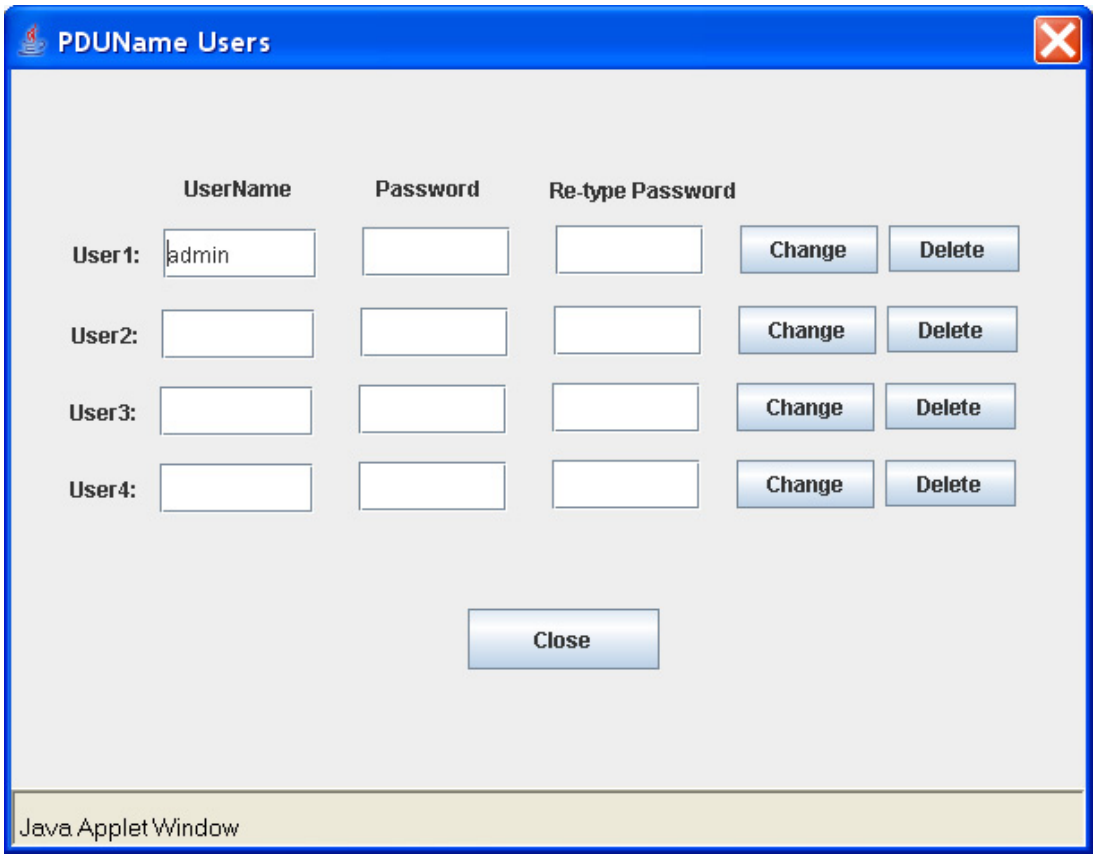


- Click the [Status] button to view current, temperature and humidity measurements and to control receptacles on Controlled PDUs. See page 31 for details.
- Click the [Configuration] button to change IP settings, set current, temperature and alarm limits and setup alarms (SNMP traps). See pages 28 through 30 for details.
- Click the [Users] button to assign or change user accounts: names and passwords. See page 27 for details.
- Click the [Logout] button to disconnect from the PDU.

For initial setup, click the [Users] button (see page 27) and assign a new user login and password. Then, click the [Configure] button (see page 28 through 30) and re-configure the PDU to match your network requirements.

Step 5: The User Menu – Assign User Passwords

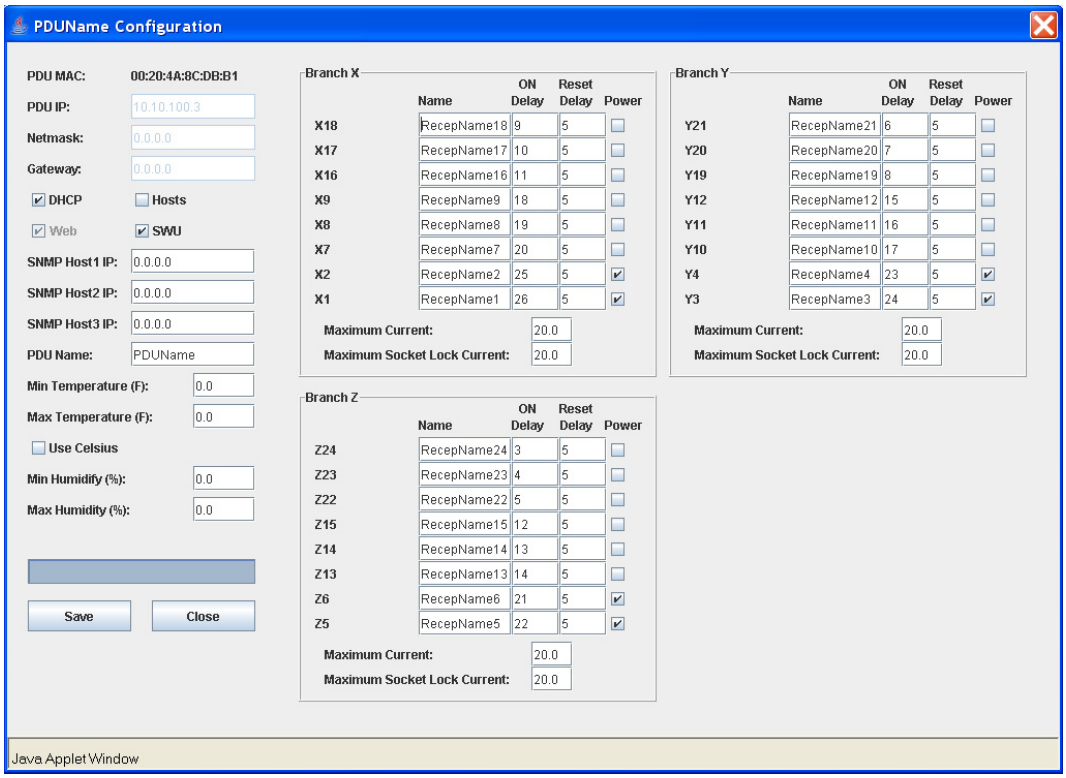
From the main menu, click on the [Users] button to create a user account with password.



- Create up to four accounts. Enter a user name and password for each account. The default account is admin, admin.
- To change a user or password, highlight the account and press the [Change] button. You will be prompted to enter the password twice.
- To delete a user account, press the [Delete] button. There must be at lease one user account.
- Press the [Close] button to return to the main menu.

Step 6: The Configure Menu – Configure The PDU For Your Network

Click the [Configure] button to view or change the PDU configuration including the network settings, receptacle names, and initial power states.



Note: This screen shows the configuration menu for a three-phase Controlled PDU. Monitored PDUs only have the Maximum Current input field under the Branch Circuits (Banch X, Y, and Z). A single-phase PDU will only have one or two Branch Circuits (Branch A or Branch A and B).

- Change the PDU IP, Netmask and Gateway values to match your network requirements. To configure the PDU for use with SEMA, assign an IP address that is in the same subnet as the SEMA server. Descriptions of each field are listed on the following pages.
- If you want the PDU to send SNMP traps as alarms to another application/appliance, enter the IP addresses in the SNMP Host IP fields. You can check the Hosts checkbox if you want the PDU to be accessed only by those selected hosts.
- On Controlled PDUs, if you want to turn certain outlet receptacles off to prevent circuit overloads, be sure to uncheck the Power checkboxes next to those receptacles.
- Press the [Save] button when you complete the changes. Note that if you change the IP address, you will need to log in using the new IP address.
- Press the [Close] button to return to the main menu without making any changes.

  Note: All CPI PDUs are configured with the same IP address at the factory. It is important that you change the IP address to match your network requirements.

- Descriptions of the fields are listed below.

  PDU MAC: Contains the assigned MAC address for the PDU's network interface hardware. This value cannot be changed.

  PDU IP: Contains the assigned IP address for the PDU in the form of xxx.xxx.xxx.xxx, where xxx is a number from 1 to 254. The factory-assigned IP address is 192.168.123.123.

  Netmask: Contains the network masking bits (sub-net mask) for the PDU in the form of xxx.xxx.xxx.xxx, where xxx is usually 255 or 0 to designate a bit pattern that masks in the network address portion of the IP address. These values depend on the network class of the assigned IP address. The factory-assigned netmask is 255.255.255.0.

  Gateway: Contains the IP address of the network's gateway PDU in the form of xxx.xxx.xxx.xxx, where xxx is a number from 1 to 254. The factory-assigned gateway is 192.168.123.1.

  DHCP Checkbox: Check to use dynamic IP address assigned by a DHCP server instead of the static IP assigned in the PDU IP address field.

  Hosts Checkbox: Check to indicate that only the Hosts listed in the SNMP Host IP Address fields can access the PDU via SNMP. When unchecked, any host can access the PDU via SNMP.

  WEB Checkbox: Check to allow access to the PDU using a web browser. This box should always be checked.

  SWU Checkbox: Check to allow software updates.

  SNMP Host1 IP Address: The PDU will send current, temperature and humidity alarms to this IP Address as SNMP traps. Leave 0.0.0.0 to disable. Not required when SEMA is used to monitor the PDU.

  SNMP Host2 IP Address: The PDU will send over current, temperature and humidity alarms to this IP Address as SNMP traps. Leave 0.0.0.0 to disable. Not required when SEMA is used to monitor the PDU.

  SNMP Host3 IP Address: The PDU will send over current, temperature and humidity alarms to this IP Address as SNMP traps. Leave 0.0.0.0 to disable. Not required when SEMA is used to monitor the PDU.

  PDU Name: Name assigned to this PDU, the maximum number of characters that can be entered is less than 32.

  Min Temperature: Set the low temperature threshold (in degrees) that when reached the PDU will send an alarm notification via SNMP trap over the network. The range of values that should be entered is 0 through 199 degrees Fahrenheit or -17 through 100 degrees Celsius when the Celsius box is checked. If this variable is set to 0°F the notification is disabled.

Max Temperature: Set the high temperature threshold (in degrees) that when reached the PDU will send an alarm notification via SNMP trap over the network. The range of values that should be entered is 0 through 199 degrees Fahrenheit or -17 through 100 degrees Celsius when the Celsius box is checked. If this variable is set to 0°F the notification is disabled.

Use Celsius checkbox: Check to provide temperature measurements in Celsius (°C) instead of Fahrenheit (°F).

Min Humidity: Set the low humidity threshold (in %) that when reached the PDU will send an alarm notification via SNMP trap over the network. If this variable is set to 0 the notification is disabled. Maximum value that should be entered is 100.

Max Humidity: Set the high humidity threshold (in %) that when reached the PDU will send an alarm notification via SNMP trap over the network. If this variable is set to 0 the notification is disabled. Maximum value that should be entered is 100.

Name: Holds the name assigned to each of the receptacles. Maximum number of characters must be less than 32. This field is only available on Controlled PDUs.

ON Delay: Holds the delay value (in seconds) for each of the receptacles, which they will spend during the first power ON of the PDU. Maximum value that can be entered is 255. This delay sequence is not applied when the circuit breakers are reset. This field is only available on Controlled PDUs.

Reset Delay: Holds the delay value (in seconds) for each of the receptacles, which they will spend in the OFF state before going back to the ON after executing a reset command from the web browser. Maximum value that can be entered is 255. This field is only available on Controlled PDUs.

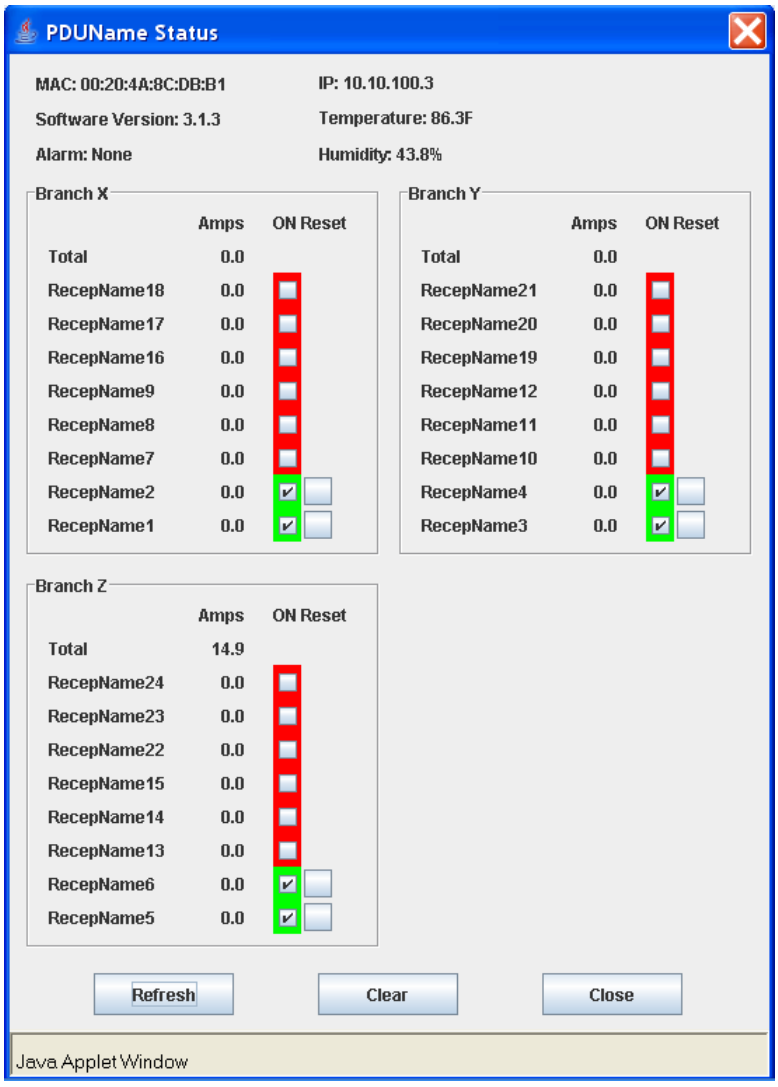
Power (ON) Checkbox: Holds the current power on state for each of the receptacles. A checked checkbox indicates that power is ON for that receptacle. Un-checking the checkbox will turn the power OFF for that receptacle. This field is only available on Controlled PDUs.

Maximum Current: Is the value (in Amperes) that when the branch circuit consumption is reached the PDU will send an alarm notification via SNMP trap over the network. If this variable is set to 0 the detection/notification is disabled. Maximum value that can be entered is 640.00.

Maximum Socket Lock Current: Is the value (in Amperes) that when the branch circuit consumption is reached will lock all the OFF state sockets. To turn any of those sockets ON, the user must reduce the current consumption on the branch or increase this value. This field is only available on Controlled PDUs.

Step 7: The Monitor Menu – Monitoring The PDU Using A Web Browser

Click the [Status] button to view current PDU conditions. The Status Dialog box will display the PDU's MAC address, IP address, software version, temperature and humidity (if a temperature and humidity sensor is attached to the PDU), alarm state, consumption in Amperes and the status of each receptacle (on/off) on Controlled PDUs.



- Any alarms are noted in the top left corner – [None] will change to a value in red. Click on it to see the alarm details or press the [Clear] button to clear the alarms.
- On Controlled PDUs, you can toggle the receptacles on/off state and cycle power to each receptacle in the on state by pressing the reset button next to the receptacle.
- On Controlled PDUs, the current consumption of each switched outlet is displayed. The total current for each branch includes current used by equipment attached to any un-switched receptacles (not listed) on the branch. Monitored PDUs display total current used by each branch only.
- Press the [Refresh] button to get the latest status.
- Press the [Close] button to return to the main menu.

TROUBLESHOOTING GUIDE

For references of SEMA, refer to SEMA User Manual

No display

Check power at the source.

Unplug the PDU input cable from the source and inspect the cable to make sure there are no cuts or visible damage. Inspect the input plug to make sure there are no damages to the pins.

If problem persists, the PDU unit must be replaced.

Display shows -1.8.8.8

Cycle power to the entire PDU.

If problem persists, the PDU unit must be replaced.

Receptacle has no power

Check port status: On/Off using PDU application tool or SEMA.

Check the circuit breaker for the branch. If necessary, switch it off then back on and recheck.

Check power at the source.

If problem persists, the PDU unit must be replaced.

No Serial Connection

Verify that proper cable is used to interface from serial RJ45 port to the computer or a concentrator.

Make sure the connectors are snapped in securely.

Verify the integrity of the cable.

Check the baud rate setting of the application program in the control computer: 9600, 8 bit, no parity, 1 stop bit. Check that there are no other applications running or special drivers installed that alter the characteristics of the serial COM port in the control computer.

If problem persists after a power cycle, the PDU unit must be replaced.

No Ethernet Connection

Verify connection with a ping tool from any computer in the network.

Check that the green LED in the PDU Ethernet port is lit.

Check that the end connectors are snapped in place.

Check the integrity of the cabling from the PDU's Ethernet port to the network switch/hub/router.

Verify the port integrity of the network switch/hub/router.

Verify via serial port that the network configurations for the PDU are set properly.

If the Ethernet communication problem persists after power cycling it, replace the PDU unit.

No SEMA Connection

Check the integrity of the Ethernet connection.

Use SEMA server's Device Finder application and check that it is detected with proper Hardware and IP addresses.

Verify via serial port that the SEMA group configurations for the PDU are set properly.

If the SEMA communication problem persists after power cycling it, contact technical support for possible firmware upgrade.

APPENDIX

Factory Default Setting

Configuration variables for the PDU:

Log Interval = 0
Alarm Interval = 0
Log Difference = 0
PDU Connection Port = 2001
SEMA Connection Port = 2002
PDU Broadcast Port = 2003
SEMA Broadcast Port = 2004
SEMA IP Address = 0.0.0.0
PDU IP Address = 192.168.123.123
PDU MAC Address = 0:0:0:0:0:0
Subnet Mask = 255.255.255.0
Gateway = 192.168.123.1
AutoIP and Hosts checkboxes are unchecked
WEB and SWU checkboxes are checked
SNMP Host1 IP Address = 0.0.0.0
SNMP Host2 IP Address = 0.0.0.0
SNMP Host3 IP Address = 0.0.0.0
PDU Name = pduname
PDU Password = <blank>
SEMA Name = <blank>
SEMA Password = <blank>
Min Temperature = 0
Max Temperature = 0
Min Humidity = 0
Max Humidity = 0
Socket Name = recepNamexx (xx suffix is the socket number)
ON Delay = 3 (for all receptacles)
Reset Delay = 5 (for all receptacles)
Power ON = ON (for all receptacles)
Maximum Current = 14.90 (for all branches)
Maximum Socket Lock Current = 14.90 (for all branches)

Regulatory Information

Managed PDU product is compliant with the following standards and specifications:

European Union:

Directive No. 89/336/EEC Electromagnetic Compatibility (EMC) as amended by 92/31/EEC and 93/68/EEC

- EN 55022: 1998 +A1 +A2 Class A
- CISPR 22: 1997
- EN 61000-3-2: 1995
- EN 61000-3-3: 1995
- EN 55024: 1998,
- EN 61000-4-2: 1995
- EN 61000-4-3: 1995
- EN 61000-4-4: 1995
- EN 61000-4-5: 1995
- EN 61000-4-6: 1995
- EN 61000-4-11: 1994

The Technical Construction File is held by Epicenter Inc., 211B Calle Pintoresco, San Clemente, CA 92672

Specifications

Dimensions: Varies by model.

Weights: Varies by model.

Altitude:
- Operating: 0 to 10,000 ft (0 to 3048 m)
- Non-operating: 0 to 30,000 ft (0 to 9144 m).

Audible Noise: Less than 60 db LpA (Sound pressure level at bystander position) The above noise level is not for office environment. It is for dedicated Datacenter environment.

Heat Dissipation: 90 BTU/hr maximum.

Shock and Vibration:
- Operating: 5 to 500 Hz, 0.5 g (0.1 octave/min)
- Non-operating: 5 to 100 Hz, 1 g (0.1 octave/min); 100 to 500 Hz, 1.5g (0.2 octave/min); 500 to 1000 Hz, 1.5 g (0.2 octave/min)

Electrical
- Grounding: Chassis grounded.
- Input Voltage: 110 to 240 VAC, varies by model
- Input Current: 20 or 30 Amperes
- Line Frequency: Single- or three-phase, 50 or 60 Hz.
- Output Power Capacity: 10, 15 or 20 Amperes, varies by model
- Configurable Power: 10, 15 or 20 Amperes, varies by model
- Nominal Output Voltage: 110 or 240 VAC, varies by model
- Output Voltage distortion: same as input
- Output Frequency: 50 or 60 Hz (same as input)
- Waveform type: same as input
- Output Connector Types: Varies by model

Temperature:
- Operating: 32° (0°C) to 104° (40°C)
- Storage: -4° (-20°C) to 140° (60°C)

Humidity:
- Operating: Non-condensing, 10 to 90 percent.
- Storage: Non-condensing, 5 to 95 percent.

Local Connection:
- RJ11connector: Environmental probe connection
- RJ45 connector: Serial connection

Remote Connection:
- Network: 10/100 RJ45
- Network Protocol: TCP/IP